

Question Threat and Response Bias

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ONE CRITICISM of using self-reports to estimate the frequency of different activities is that there may be systematic bias in such reports. The bias is believed to be toward overreporting for socially desirable behaviors (e.g., voting), and toward underreporting for socially undesirable behaviors (e.g., intoxication) and for those of a personal nature about which respondents may feel uneasy talking with others, particularly strangers (e.g., sexual behavior). Because investigators often have no practical alternative to reliance on self-reports, it is important to understand as fully as possible the sources of these reporting biases, and, where possible, to use question formats and control variables that will enable the investigator to minimize or adjust for the reporting biases. This article presents the results of a study designed to investigate factors related to behavioral reports typified by underreporting.

We can distinguish two kinds of questions which might lead respondents to distort their responses: (1) anxiety-arousing questions about, for example, behaviors that are illegal or contra-normative or about

Abstract Perceived normative threat influences responses to questions in surveys. Respondents who report that questions about an activity would make most people very uneasy are less likely to report ever engaging in that activity than are persons who report less uneasiness. If respondents do not admit to participating in an activity, perceived threat appears to have acted as a gatekeeper to prevent further questions. Since perceived threat is associated with underreporting, some simple adjustment methods may be used to improve behavioral estimates.

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behaviors that, though not socially deviant, are not usually discussed in public without some tension, and (2) questions about highly desirable or socially condoned behavior, like voting. The two kinds of questions are closely related, since they both involve social definitions of "desirable" behavior, but they differ in one important respect—with the first kind of question it is the report of committing acts that is contra-normative; with the second, it is the report of *not* doing something that is contra-normative. One might characterize the difference as that between questions about sins of commission and those about sins of omission. One might speculate that answers to questions about sins of commission will be biased toward underreporting and that questions about sins of omission will be biased toward overreporting.

The conflict between the role demands of the "good respondent" and the tendency to present oneself positively is resolved in the respondents' answers, but, unfortunately, the investigator does not know in any individual case, unless he has independent validation data, which way the conflict was resolved. One can, however, investigate covariation between the perceived social sensitivity of a topic and the responses to questions on that topic to determine the relative magnitude of response variance produced by tendencies toward anxiety reduction and positive self-presentation.

In this article we shall investigate threatening questions (i.e., those that tend to arouse anxiety in respondents). We assume that the effect of threat is in only one direction—toward underreporting. In the absence of any independent validation data, we assume that greater reports of contra-normative behavior indicate less response bias, recognizing, of course, that such an assumption might not be true for all respondents. What is contra-normative behavior in the society as a whole may be socially valued by some subcultures and therefore over-reported by its members. For surveys of the total population, we assume that such subcultural differences will have minimal effects on total estimates and that underreporting is, for practical purposes, all that is going on.

There is considerable empirical evidence that the reporting of certain behaviors in surveys decreases as questions increase in their degree of threat. Sudman and Bradburn (1974) summarize the literature prior to 1970 on this topic, including studies by Cannell and Fowler (1963); Clark and Wallin (1964); Clark and Tiffet (1966); David (1962); Ellis (1947); Kahn (1952); Kinsey et al. (1948); Knudsen et al. (1967); Levinger (1966); Mudd et al. (1961); Poti et al. (1962); Sarason (1956, 1957, 1959); Thorndike et al. (1952); U.S. National Center for Health Statistics (1971); Wallin and Clark (1958); Yaukey et al. (1965); and Young (1969). Locander et al. (1976), Johnson and DeLamater (1976),

and DeLamater and MacCorquodale (1975) report more recent experiments.

Methods and Results

The results reported below come from a nationwide U.S. sample survey of 1,172 adults conducted by the National Opinion Research Center during the summer of 1975. The survey was conducted as an experiment in which the relationships between question structure, question length, wording familiarity, and response effects were examined. The experiment was a 2^3 factorial design in which two levels of question structure (open- and closed-ended), two levels of question length (questions with introductions exceeding 30 words and question with shorter introductions or none at all), and two levels of wording familiarity (a standard question form and a familiar form in which the respondent supplied his own words for the question topic) were employed. Thus, eight different forms of the questionnaire were used.

Segments of households were selected by probability methods from NORC's sampling frame. Within each segment, eight respondents were selected with quotas for sex, age, and working women so that one of each questionnaire form was used in each segment. The order of the forms was systematically rotated across segments. The substantial form effects that emerged are reported elsewhere (Blair et al. 1977). Forms and perceived threat did not interact. In this paper the data are combined across forms.

The threatening questions were placed within the framework of a leisure activity study. After opening questions about such general recreational activities as going to a movie, dining at a restaurant for pleasure, going bowling, playing golf, listening to the radio, and watching television, respondents were asked a series of questions on satisfaction and happiness with life. These items were followed by questions concerning gambling, drinking and getting drunk, smoking marijuana, using stimulant or depressant drugs, and sexual behavior. This order was selected by a priori judgment so that the questions became more threatening as the interview progressed.

The respondent's perceptions of normative threat were obtained at the end of the interview through the following question:

Questions sometimes have different kinds of effects on people. We'd like your opinions about some of the questions in this interview. As I mention groups of questions, please tell me whether you think those questions would make *most people* very uneasy, moderately uneasy, slightly uneasy, or not at all uneasy. How about the questions on:

There followed a list of topics that had been treated in the interview.

This type of question, which indirectly taps uneasiness, had previously been found (Locander, 1974) to be related to underreporting of arrests for drunken driving and declared bankruptcies in a study where independent validation data were available. The indirect form of the question, asking about the respondent's perception of the way most people would feel, appears to be a better indicator of uneasiness than direct questions about whether the respondent felt uneasy about the question. The "indirect" question is, in fact, a direct question about the respondent's perception of social norms. We interpret the responses as perceptions of the strength of the norms against discussing these topics openly with strangers—for example, reporting accurately on behavior. As the perceived strength of the norms increases, we would expect that there would be more inclination to present oneself favorably and thus to distort responses in the direction of underreporting. In addition, we directly asked respondents which of the questions they felt were too personal, and we asked the interviewers to rate the questions for difficulty in the interview. We also have a behavioral measure in the proportion of respondents who declined to answer the questions with differing levels of threat.

Table 1 presents the ratings for the different question topics. They are ordered by increasing frequency of uneasiness, or the perceived strength of the norms against discussing the topics freely. The second and third columns of the table give the interviewer reports of the percentage of respondents for whom the question topic caused difficulty in the interview and the proportion of the respondents who reported (on an open-ended question) that the indicated question topic was too personal. In the final column are the behavioral data—that is, the proportion of the respondents who refused to give any answer to the questions in that topic area. For those areas in which there were multiple questions about activities (e.g., social activities) the figure is the average "no answer" for the battery of questions. If the questions were filtered (e.g., "Did you do X in the past year; if yes, in the last month? . . .") the "no answer" proportion is for the first question in the series.

The question topics were selected a priori to cover a range of normative strength. The ratings by the respondents indicate that we succeeded in selecting questions which practically no one believed would make people very uneasy. While the interviewer reports of difficulty with questions are generally lower than respondents' ratings of their threat, the rank order of difficulty and uneasiness is very close ($\rho = .89$). The respondents' reports about which questions were too personal *for them* show little variance. Only the sexual behavior questions were reported to be too personal by a substantial proportion. The

Table 1. Ratings of Question Topics (Percent of 1,172 Respondents^a)

<i>Question Topics</i>	<i>Make Most People Very Uneasy (R's Rating)</i>	<i>Caused Diffi- culty in Interview (Interviewer Rating)</i>	<i>Question Too Personal (R's Rating)</i>	<i>No Answer on Actual Question</i>
Sports activities	1%	0%	0%	0.1%
Leisure time and general leisure activities	2	0	0	0.2
Social activities	2	4	0	0.8
Occupation	3	3	2	0.1
Education	3	2	1	0.3
Happiness and well-being	4	6	2	0.3
Drinking beer, wine, or liquor	10	10	3	0.1
Gambling with friends	10	3	2	0.2
Income	12	9	6	4.8
Petting or kissing	20	19	0	0.3
Getting drunk	29	9	2	2.3
Using stimulants or depressants	31	12	3	0.1
Using marijuana or hashish	42	10		0.4
Sexual intercourse	42	27	34	6.0
Masturbation	56	29		6.7

^a Actual *N* varies slightly from question to question because of no answers.

behavioral measure of threat—refusal to answer a question—also reveals very little variance among the question topics. Only sexual behavior and income show any substantial number of “no answers,” and these are far below both the uneasiness ratings and the interviewers’ reports of difficulty. Such data suggest that the proportion of “no answers” is not a very good indicator of the potential threat of a question.

The income question appears to be special in that it departs furthest in its ranking by the other measures from the general normative ratings given by the respondents. It is about in the middle in respondents’ ratings of uneasiness and in the interviewers’ ratings of difficulty, but it is the second highest in respondents’ perceptions of “too personal” questions (although way behind sex) and has the second highest “no answer” rate. If “don’t knows” are combined with “no answers,” income is the most troublesome of the standard social characteristics questions typically used in surveys.

There are several ways to react to a question that causes uneasiness about answering truthfully. Respondents can refuse to answer the question at all, indicating that they feel that the question is inappropriate.

ate in the context of the interview, or respondents can distort answers in the direction of the more socially desirable or least ego-threatening response. For the questions used in this study, we assume the direction of distortion to be denial of engagement in activities when the respondent has in fact done so. In order to make it easier for respondents to refuse individual questions, we told them at the beginning of the interview that some of the questions we were going to ask might make them feel uneasy and that they need not answer any particular question if they did not want to. In spite of this introduction, as we have seen in Table 1, very few respondents refused to answer even the most threatening questions.

It seems likely that instead of refusing outright many respondents simply reported that they did not engage in some particular activity when they in fact did, thereby resolving the dilemma of being a good respondent by answering the question, but still presenting a positive self-picture to the interviewer. We suspect that such a tendency would be particularly marked among those who feel that there are strong norms against discussing such topics in an interview situation. We can test this hypothesis by looking separately at the distribution of responses to the behavior items for those who rated each of the topics as making most people "very uneasy." If the respondents resolved their dilemma in the way that we have suggested, we should find that those who rated the question topic as making more people "very uneasy" also reported less behavior in that category.

For the most part, the data support this expectation (Table 2). Those who reported that most people would feel "very uneasy" about answering questions on a particular topic were less likely to report having engaged in that behavior than were people who said that most people would feel only "moderately" or "slightly uneasy" about the question. For example, of the 120 respondents who reported that most people would be made "very uneasy" by questions on gambling, 11 percent reported that they had played cards for money during the past year, as compared with 32 percent of the 419 respondents who reported that most people would be made "slightly uneasy" by questioning about gambling. Combining across all gambling activities, those respondents saying "very uneasy" reported an average of .49 gambling activities in the past year, as compared with an average of 1.13 gambling activities reported by respondents who said questions on gambling would make most people "slightly uneasy." Those who felt that most people would be "not at all uneasy" about answering the question showed an inconsistent pattern, a finding to which we shall return later.

For the question about satisfaction with life as a whole, on which we would expect overreporting, we did find that those few who felt that such questions would make people feel "very uneasy" were more

Table 2. Reported Behavior by Level of Uneasiness about Question

Topics	Percent of Those Who Felt . . . Who Reported			
	Very Uneasy	Moderately Uneasy	Slightly Uneasy	Not at All Uneasy
Av. no. sports activities ^a	.60 _{(15)^b}	1.00 ₍₂₆₎	1.36 ₍₇₄₎	2.09 _(1,042)
Av. no. leisure activities	4.42 ₍₂₈₎	5.04 ₍₇₉₎	5.36 ₍₁₂₁₎	5.80 ₍₉₃₂₎
Happiness and well-being (very satisfied with life)	29.00 ₍₄₁₎	18.00 ₍₁₁₇₎	21.00 ₍₄₃₂₎	33.00 ₍₅₅₈₎
Gambling				
Played cards for money	11.00 ₍₁₂₀₎	30.00 ₍₁₅₅₎	32.00 ₍₄₁₉₎	34.00 ₍₄₅₆₎
Bet on sports	8.00	16.00	21.00	20.00
Bet on elections	3.00	12.00	10.00	11.00
Betting pool	5.00	18.00	19.00	18.00
Played dice	3.00	6.00	7.00	8.00
Bought lottery ticket	18.00	20.00	24.00	27.00
Av. no. gambling activities	.49	1.01	1.13	1.18
Drinking				
Ever drunk beer or ale	67.00 ₍₁₁₉₎	82.00 ₍₁₆₆₎	82.00 ₍₄₃₂₎	80.00 ₍₄₃₈₎
Ever drunk wine or champagne	60.00	82.00	89.00	80.00
Ever drunk hard liquor	63.00	84.00	85.00	84.00
Intoxication				
Intoxicated during past year	24.00 ₍₃₂₇₎	36.00 ₍₂₃₃₎	38.00 ₍₃₃₂₎	27.00 ₍₂₃₀₎
Marijuana				
Ever smoked marijuana	18.00 ₍₄₈₀₎	33.00 ₍₂₁₇₎	26.00 ₍₂₂₀₎	15.00 ₍₂₅₀₎
Drugs				
Ever used depressants	14.00 ₍₃₅₉₎	15.00 ₍₂₇₉₎	10.00 ₍₂₇₆₎	5.00 ₍₂₃₁₎
Sex				
Petting and kissing in last month	63.00 ₍₂₂₄₎	81.00 ₍₂₈₁₎	78.00 ₍₃₄₀₎	71.00 ₍₃₀₁₎
No answer	7.00	3.00	2.00	1.00
Intercourse in past month	59.00 ₍₄₇₄₎	75.00 ₍₂₉₆₎	75.00 ₍₂₀₉₎	53.00 ₍₁₆₇₎
No answer	9.00	4.00	1.00	2.00
Masturbation in past month	10.00 ₍₆₃₀₎	11.00 ₍₂₀₈₎	7.00 ₍₁₄₈₎	8.00 ₍₁₃₂₎
No answer	6.00	4.00	4.00	2.00

^a Statistical tests of significance are not reported on these data because we are not testing hypotheses in the strict sense and are using hypotheses suggested by the data. See Kruskal (1968: 245-47).

^b Figures in parentheses are the case bases on which the percentages or averages are calculated.

likely to report being "very satisfied" than those in the "moderately" or "slightly" category, but not than those in the "not at all" category.

This pattern of reporting does not vary much for respondents with different socioeconomic and demographic backgrounds. Sex, race, income, occupation, region, and city size have no significant effect. Education and age have statistically significant effects, but the differences in reporting across education and age groups do not form an interpretable pattern.

One important point must be made about the findings. The effect of rating a topic as having high normative threat tends to show up only in the first question about the topic, which is typically: "Have you ever used/done . . .?" If the respondent replies "yes," then a series of questions follow about frequency or quantity of behavior. Normative threat appears to act as a screen so that those who report uneasiness about the topic select themselves out of the entire battery of questions by simply saying that they have never done or used the subject of the questions. If, however, they admit having used or done the thing asked about, level of uneasiness does not appear to influence reports of frequency or quantity of behavior. In a separate paper (Blair et al., 1977), question structure (open or closed) and length (of introductions) have been shown to have an important effect on reports of frequency and amount of behavior, if the respondent admits having engaged in the behavior at all. The question wording variables, however, were not related to the initial reports of ever having engaged in the behavior.

Thus, it appears that there is a two-step process which affects answers to questions about threatening behaviors. In the first step, respondents who may have engaged in the behaviors but find it contra-normative to discuss this in the interview resolve the conflict between reporting accurately and presenting a positive self-image by denying that they have ever engaged in the behavior. In the second step, the question wording encourages or discourages efforts to report accurately the extent of the behavior.

The differences in reporting are mainly between those who report that most people would be "very uneasy" in talking about a particular topic and all others. In some cases, however, particularly concerning those questions about topics rated as more threatening, those reporting that most people would be "not at all uneasy" in discussing the topic should also have lower levels of reporting actual behavior. It is to this finding that we now turn.

The Nonthreatened Respondent

In hypothesizing a relationship between normative threat and behavioral underreporting, we assumed that there was no relationship between perceived normative threat and a person's behavior; that is,

we assumed that respondents' perceptions of the norms about talking about certain kinds of behavior were independent of whether they had actually engaged in such behavior. This assumption implied that the norms are "social facts" that are more or less accurately and uniformly known. We expect that the probability of a particular type of behavior actually occurring would be equal across all categories of response about the normative threat of that type of behavior. Thus, when we observe that the proportion of people who report engaging in some particular behavior is lower in one response category, we interpret this as evidence of underreporting rather than as evidence of a real difference.

This assumption of independence of the perception of social norms and actual behavior is, however, somewhat tenuous when applied to behavior that is more seriously contra-normative. People who have not engaged in the behavior may have a "clear conscience" and estimate other people's willingness to talk about the topic differently from those who have engaged in the behavior and have a "guilty conscience." In this case there would be an interaction between the perceived normative threat and the respondents' own behavior such that their own behavior becomes part of the determinant of the perceived norms.

If there were such an interaction between the respondent's actual behavior and their perception of norms about discussing the topic with strangers, we would expect that the occurrence of a contra-normative behavior would really be higher for respondents with higher perceptions of general uneasiness. That is, among respondents who report that most people would be "not at all uneasy" about discussing a topic, a smaller proportion would actually engage in the behavior than would be the case among respondents who report that most people would feel "slightly uneasy," "moderately uneasy," or "very uneasy." Underreporting by respondents who report "very uneasy" would cause a non-monotonic relationship between reported behavior and perceived uneasiness, with reported behavior rising and then falling across uneasiness categories.

Such a non-monotonic relationship is what we find for topics that 20 percent or more of the respondents rated as making most people "very uneasy." In response to these topics, we find the proportions of respondents reporting the behavior to be lower for both of the two extreme groups—"very uneasy" and "not at all uneasy"—than for the intermediate categories. If our interaction hypothesis is true, the lower behavioral reports among those who say "very uneasy" are primarily due to underreporting, and the lower reports among the "not at all uneasy" are primarily due to real differences in behavior. While such an interpretation is plausible, we do not have any external validation data to test out this hypothesis.

Revised Estimates of Threatening Events

Assuming that respondents who report that a question would make most people "very uneasy" are underreporting their behavior in that area provides a simple method for improving estimates of threatening behaviors. Revised estimates may be obtained either by assuming that "very uneasy" respondents behave like all other respondents, or by assuming that "very uneasy" respondents behave like the "moderately" uneasy respondents.

For the gambling, drinking, and petting and kissing questions, the revised estimates are 2 to 8 percent higher than the initial estimates. For the more threatening intoxication, marijuana, and sexual intercourse questions, revised estimates exceed original estimates by larger amounts, from 8 percent for the sexual intercourse question to 27 percent for the marijuana questions. These larger differences occur because a larger fraction of the sample reports being "very uneasy" about these questions so that the impact on the overall estimate is greater.

Common sense suggests that revised estimates which incorporate supplementary information about uneasiness are improved estimates. Obviously, one would like direct proof that revision is improvement, but in this study we could not get validating evidence. Locander's (1974) earlier study did have such validation information available from record checks. Respondents who reported that questions about traffic violations and declaration of bankruptcy would make most people very uneasy reported only 27 percent of validated events, compared to about 75 percent for respondents who perceived these questions as less threatening. Even respondents who reported that these extremely threatening questions would make most people somewhat uneasy or not at all uneasy underreported behavior. Use of a supplementary question on perceived threat will provide an improved estimate, but not an unbiased estimate.

It may be interesting to compare this estimation technique with randomized response procedures used for estimating threatening behavior (see Reinmuth and Geurts, 1975). Randomized response procedures assume that respondents will tell the truth if their anonymity is guaranteed by use of the randomized response mechanism. While some evidence shows that randomized response procedures do improve estimates, other evidence shows that response effects do remain. In the Locander et al. (1976) study, for example, 35 percent of those respondents who had been arrested for drunken driving did not report this arrest when using a randomized response procedure. Randomized response methods and the use of supplementary information on per-

ceived threat both yield improved, but not perfect, estimates, and both methods make assumptions about respondent behavior that are partially, but not completely, true.

Comparison of These Results with Other Data

Table 3 compares both the unadjusted and adjusted estimates from the previous section to some comparative data from other sources. Since the different experimental forms did have effects on the number of times behaviors were reported, once the respondent had admitted them (Blair et al., 1977), the estimates for some of the items are given separately by form.

In general, the unadjusted data are very similar to results from other surveys. As examples, a national study conducted by Temple University's Institute of Social Research (Wilson, 1975) estimated that 68.8 percent of adults had engaged in intercourse in the past month, and the unadjusted estimate from this study is 68.6 percent. It was estimated that 19 percent of respondents had ever smoked marijuana in a national study conducted by the Response Analysis Corporation (Abelson and Atkinson, 1975), compared to 21.7 percent in this study.

Adjusted estimates are larger than comparative surveys, indicating that current estimates are somewhat low. That current estimates are low can be seen in the estimates for beer, wine, and liquor consumed, where even the adjusted estimates using the best forms understate sales by at least one-fourth. Our study did not ask how many ounces of beer, wine, and liquor were consumed, but how many glasses. The conversion to ounces was made by assuming that the average wine glass contained three ounces. Similarly, it was assumed that a glass or can of beer contained twelve ounces, and that a drink of liquor contained one ounce.

Summary

It is evident from the results of this study that the perceived normative threat of a topic influences responses to questions. Respondents who report that questions about an activity would make most people very uneasy are less likely to report ever engaging in that activity than are persons who are only moderately uneasy. Perceived threat thus acts as a gatekeeper to prevent further questions.

If respondents admit to participating in an activity, perceived threat appears to have no effect on the level of activity reported. While the

Table 3. Unadjusted Data, Adjusted Data,^a and Comparison Data

<i>Items</i>	<i>Unadjusted</i>	<i>Adjusted</i>	<i>Comparison Data</i>
Engaged in intercourse past month	68.6%	74.0%	68.8%
Mean annual frequency of intercourse (all adults)			
Long, open forms	90	101	
Short, closed forms	72	79	76 ^b
Ever smoked marijuana	21.7%	27.6%	19% ^c
Number of times drunk beer in past year (for adults who drank beer in past month)			
Long, open form	124	126	
Short, closed form	73	74	82.41 ^d
Number of times drunk wine in past year (for adults who drank wine in past month)			
Long, open form	77	76	
Short, closed form	47	49	42.95 ^d
Number of times drunk liquor in past year (for adults who drank liquor in past month)			
Long, open forms	68	65	
Short, closed forms	48	49	56.21 ^d
Ounces of beer consumed per capita in past year (all adults)			
Long, open form	2,046	2,099	
Short, closed form	1,163	1,173	3,982 ^a
Ounces of wine consumed per capita in past year (all adults)			
Long, open form	206	225	
Short, closed form	104	106	304 ^e
Ounces of liquor consumed per capita in past year (all adults)			
Long, open forms	86	87	
Short, closed forms	65	67	234 ^a

^a The "very uneasy" group has been given the mean of the "moderately uneasy" group as an adjustment.

^b Wilson (1975).

^c Abelson and Atkinson (1975).

^d Harris (1974).

^e United States Brewers Association, Inc. (1975).

effects of perceived threat on response are important, they are smaller than the effects of question structure, which do change levels of reported activity.

Since perceived threat causes underreporting, some simple adjustment methods may be used to improve estimates of threatening behavior. These assume that respondents who report being very uneasy are at least as likely to participate in an activity as those who report being moderately uneasy or all other respondents.

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